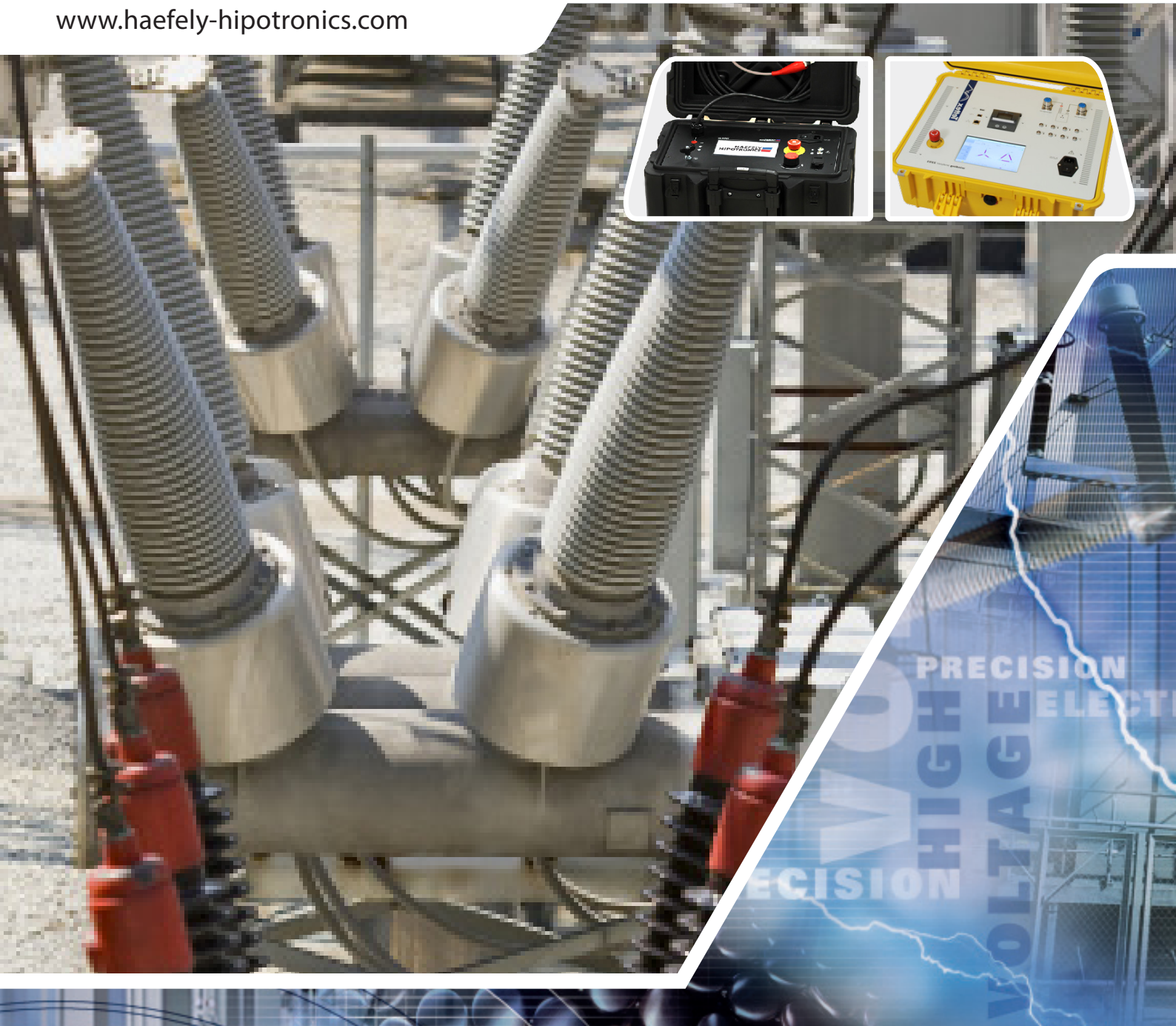


# UTILITY & SUBSTATION TESTING

APPLICATION GUIDE

[www.haefely-hipotronics.com](http://www.haefely-hipotronics.com)





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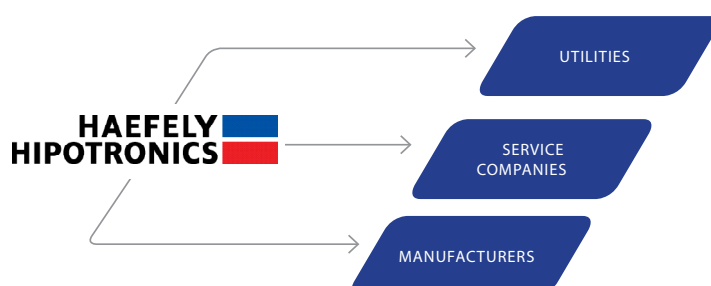
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## PRODUCT LINE OVERVIEW

	HVT-DI Series	800 SERIES	OC SERIES	7BT60	2293	2795 / 2796	KVM SERIES	5462	5311	MIDAS	MIDAS micro
AC HIPOT	•		•	•							
DC HIPOT		•									
VACUUM BOTTLE				•							
LIQUID DIELECTRIC			•								
WINDING RESISTANCE					•						
TURNS RATIO					•	•					
VOLTAGE MEASUREMENT							•				
RECOVERY VOLTAGE MEASUREMENT								•			
FREQUENCY RESPONSE									•		
POWER FACTOR / C TAN $\delta$										•	•

## MARKET SEGMENTS

CUSTOMER BASE FOR UTILITY & SUBSTATION TESTING



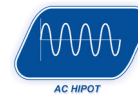
PORTABLE AND  
EFFICIENT

# AC & DC HIPOT TESTING

For utility and service companies, electrical maintenance testing is crucial for promoting and maintaining safety. The voltage withstand ability - or dielectric breakdown - of this equipment should be tested regularly to ensure insulation integrity.

Proper testing and recording of test results can detect existing issues and prevent future hazards.

		TEST VOLTAGE						
		0-15 kV	≤ 30 kV	≤ 60 kV	≤ 80 kV	≤ 100 kV	≤ 120 kV	≤ 170 kV
AC Testing HVT-DI SERIES	30HVT-DI	.	.					
	60HVT-DI	.	.	.				
	100HVT-DI	.	.	.	.	.		
	120HVT-DI	.	.	.	.	.	.	
DC Testing 800 SERIES	840PL-DC	.	.					
	880PL-DC	.	.	.	.			
	880PL-HD	.	.	.	.			
	8120	.	.	.	.	.	.	
	8170	.	.	.	.	.	.	.



## ACCESSORIES



Purchase our Grounding Stick to deenergize devices under test; it is suitable for AC or DC hipots rated up to 120 kV.

## DEVICES UNDER TEST

- Rubber goods
- Aerial lift trucks
- Hot sticks
- Cable
- Transformers
- Electrical switchgear
- Motors / Generators

### HVT- DI SERIES



### 800 SERIES





TEST SEQUENCE

OC60-DI

OC90

7BT60

0-60 kV

AC TEST  
VOLTAGE

≤ 90 kV

VACUUM TESTING

LIQUID DIELECTRIC  
TESTINGAPPLICATIONS  
& FEATURESPRINTABLE TEST  
RESULTS

# LIQUID DIELECTRIC TESTING

## OC SERIES

The OC Series is designed to test the dielectric integrity of liquid insulation in a variety of electrical apparatus. This equipment was designed to test standards such as ASTM D877, ASTM D1816, and IEC 156.



### FUNCTIONALITY

- ✓ Tests per ASTM and IEC standards
- ✓ Automatic high voltage shutdown at breakdown point
- ✓ Lightweight and portable design
- ✓ Digital memory kilovoltmeter
- ✓ Data acquisition via USB



# VACUUM BOTTLE TESTING

## 7BT60

The 7BT60 tests the integrity of vacuum interrupters in switchgear and allows users to select desired test parameters and then watch the sequence run automatically. Once complete, the pass/fail indicator lamp provides immediate, visual indication of test results.

### EASY-TO-OPERATE

- ✓ Automatic test procedure
- ✓ Center-tapped transformer
- ✓ Dwell timer
- ✓ Failure indicator
- ✓ Portable





# RESISTANCE & TURNS RATIO MEASUREMENT

Designed by  
**Tettex**  
INSTRUMENTS

## WINDING ANALYZER 2293

The 2293 is designed to test power transformers, distribution transformers, generators, motors, and instrument transformers.



### UNMATCHED ADVANTAGES

World's first analyzer to combine:

- Winding resistance
- Turns ratio
- Demagnetization
- Heat run



## TRANSFORMER TURNS RATIO METERS 2795 & 2796

This Transformer Turns Ratio (TTR) family combines mobility with user-friendly handling. Both models carry the unmatched accuracy that Tettex products are known for.

### APPLICATIONS

- Power transformers
- Distribution transformers
- Instrument transformers
- Special transformers:
  - ✓ Phase-shifting
  - ✓ Rectifier
  - ✓ Arc-furnace
  - ✓ Traction



POWER LEVEL

	< 150 MVA	> 150 MVA
TTR 2795 (100 V)	•	
TTR 2796 (250 V)	•	•



# VOLTAGE MEASUREMENT

## KVM-W

The KVM Series offers models in 100 kV, 200 kV, 300 kV, and 400 kV with the ability to function in both high and low voltage ranges for maximum accuracy.

### BENEFITS

- ✓ Portable carrying case for the 100kV and 200kV models
- ✓ Battery-operated
- ✓ Fast and accurate measurements
- ✓ Useful for a wide variety of applications
- ✓ Lightweight



# RECOVERY VOLTAGE MEASUREMENT

## RVM 5462

The RVM 5462 measures moisture content in a transformer's oil-paper insulation, allowing the user to evaluate the degradation rate and determine the transformer's residual lifetime.

### OVERVIEW

- Non-destructive test on oil-paper insulation
- Definable test procedures
- Clear indication of results, with built-in printer
- Rugged and lightweight



# FREQUENCY RESPONSE ANALYSIS

## FRA 5311

The Frequency Response Analyzer (FRA) is used to measure frequency response in passive elements of a transformer. These measurements produce a unique fingerprint of every transformer's mechanical geometry.

### FEATURES

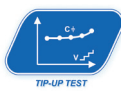
- Use of active probes for high measurement reliability and repeatability
- Rugged and lightweight



# POWER FACTOR / C TAN $\delta$

## MOBILE INSULATION DIAGNOSTICS & ANALYZING SYSTEM (MIDAS)

The MIDAS series measures and records tan delta (dissipation factor), power factor and capacitance in various utility products. These units can be upgraded to include turns ratio measurement, frequency response analysis and short circuit impedance. The MIDAS micro 2883 is the smallest and most compact insulation set on the market. Its single-box design weighs only 25 kg / 55 lbs - making tests easy both in the factory and in the field.



OUTPUT  
VOLTAGE

CONTROLLER

DEVICES UNDER TEST

	≤ 12 kV	≤ 15 kV	Laptop	Touchscreen	Rotating Machines	Power Transformers	Instrument Transformers	Bushings	Capacitors	Circuit Breakers	Surge Arrestors
MIDAS micro 2883	•			•		•		•	•	•	•
MIDAS 2881	•		•		•	•	•	•	•	•	•
MIDAS 2881G		•	•		•	•	•	•	•	•	•





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